

WHAT IS CLAIMED IS:

1. A device for carrying out a solid-catalyzed reaction, comprising:

a plurality of chambers, each chamber comprising a catalyst; and

a common evaporation unit for evaporating liquid starting materials, wherein the evaporation unit is in thermally conductive contact with the plurality of chambers,

wherein an area of the evaporation unit in which evaporation of the liquid starting materials substantially takes place is at least partially surrounded by the plurality of chambers.

2. A device according to Claim 1, wherein the evaporation unit is entirely surrounded by the chambers.

3. A device according to Claim 1, wherein the evaporation unit is arranged in an edge region of the plurality of chambers, such that it adjoins the plurality of chambers.

4. A device according to Claim 1, wherein the evaporation unit is substantially in direct contact with catalyst layers of the plurality of chambers.

5. A device according to Claim 1, wherein the evaporation unit is rigidly connected to the plurality of chambers.

6. A device according to Claim 1, wherein the evaporation unit is movably connected to the plurality of catalyst-containing chambers.

7. A device according to Claim 1, wherein the evaporation unit is thermally coupled to the plurality of chambers such that the thermal coupling varies with a temperature gradient in the evaporation unit.

8. A device according to Claim 7, wherein the thermal coupling is designed to be variable in an inversely proportional manner to the temperature gradient.

9. A device according to Claim 1, wherein the evaporation unit comprises a plurality of parallel channels.

10. A device according to Claim 1, wherein the starting material is a hydrocarbon.

11. A device according to Claim 10, wherein the hydrocarbon is at least one of an ether or an alcohol.

12. A process for autothermal reforming of methanol, comprising:

evaporating methanol in an evaporation unit, wherein the evaporation unit is in thermally conductive contact with a plurality of chambers, each chamber comprising a reformation catalyst; and

catalytically reforming vaporized methanol in said plurality of chambers,

wherein an area of the evaporation unit in which evaporation of the methanol substantially takes place is at least partially surrounded by the plurality of chambers.

13. A fuel cell system comprising a device according to Claim 1.

14. A method of producing hydrogen for a fuel cell system, comprising:

evaporating a hydrocarbon in an evaporation unit,
wherein the evaporation unit (2) is in thermally conductive
contact with a plurality of chambers, each chamber comprising
a reformation catalyst;

catalytically reforming vaporized hydrocarbon in said plurality of chambers, thereby producing hydrogen; and

wherein an area of the evaporation unit in which evaporation of the methanol substantially takes place is at least partially surrounded by the plurality of chambers.